AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A luminance dynamic range system, comprising:

an image processing module for transforming an input image into a luminance component L_{in} and chrominance components, C_1 and C_2;

a spatial low pass filter, responsive to L_{in} for outputting a filtered luminance component L_f, wherein L_f is a function only of L_{in}~~,~~[[;]] wherein the low pass filter is small enough that shadow regions are passed through as low luminance, and large enough to filter out detail in high-contrast regions; and

a luminance compression module for gamut mapping that varies across different parts of the input image, spatially adapting the luminance compression function according to local image characteristics in such a manner as to preserve both shadow detail and overall image contrast, responsive to L_f and L_{in} for performing luminance compression on the input component L_{in} to output a compressed luminance signal L_{out} that is within an achievable luminance range of an output device; wherein the luminance compression module combines two compression functions $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ via a blending function $\alpha(L_f)$; wherein the function L_{comp1} is optimized for preserving overall image contrast and the function L_{comp2} is optimized for preserving shadow detail; wherein $L_{comp1}(L_{in})$, $L_{comp2}(L_{in})$ and $\alpha(L_f)$ are all 1-dimensional functions only of L_{in}; and wherein $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ are both designed such that the overall compression function is spatially smooth and to map the luminance dynamic range of ~~an~~ the input image to the more limited dynamic range of ~~an~~ the output device.

2. (Canceled).

3. (Previously Amended) The system of claim 1, wherein L_{out} is computed

according to the relationship $L_{out} = \alpha(L_f)\ Lcomp1(L_{in}) + (1 - \alpha(L_f))\ Lcomp2(L_{in})$.

4. (Previously Amended) The system of claim 1, wherein $\alpha(L_f)$ is a piecewise linear function, determined by two breakpoints, B_1 and B_2.

5. (Previously Amended) The system of Claim 1, wherein function L_{comp1} is optimized for preserving overall image contrast.

6. (Previously Amended) The system of Claim 1, wherein function L_{comp2} is optimized for preserving shadow detail.

7. (Original) The system of claim 4, wherein:

$\alpha(L_f) = 0$ for values of L_f between 0 and B_1;

$\alpha(L_f)$ increases linearly from 0 to 1 for values of L_f from B_1 to B_2; and

$\alpha(L_f) = 1$ for values of L_f between B_2 and L_{max},

where L_{max} is a maximum luminance achievable by the output device.

8. (Canceled).

9. (Original) The system of claim 1, wherein the low pass filter comprises a constant weight filter.

10. (Currently Amended) The system of claim 1, wherein the <u>input</u> image is down-sampled prior to filtering and upsampled and interpolated after filtering.

11. (Original) The system of claim 1, further comprising a color correction module for transforming L_{out}, C_1 and C_2 to CMYK for printing.

12. (Currently Amended) A method for luminance dynamic range

mapping, comprising:

transforming an input image into a luminance component L_{in} and chrominance components, C_1 and C_2;

spatially low pass filtering L_{in} into a filtered luminance component L_f, wherein L_f is a function only of L_{in},[[;]] wherein the low pass filtering is small enough that shadow regions are passed through as low luminance, and large enough to filter out detail in high-contrast regions; and

processing L_f and L_{in} through a luminance compression module for gamut mapping that varies across different parts of the input image, spatially adapting the luminance compression function according to local image characteristics in such a manner as to preserve both shadow detail and overall image contrast, to obtain a compressed luminance signal L_{out} that is within an achievable luminance range of an output device; wherein the processing step comprises combining two compression functions $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ via a blending function $\alpha(L_f)$; wherein the function L_{comp1} is optimized for preserving overall image contrast and the function L_{comp2} is optimized for preserving shadow detail; wherein $L_{comp1}(L_{in})$, $L_{comp2}(L_{in})$ and $\alpha(L_f)$ are all 1-dimensional functions only of L_{in}; and wherein $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ are both designed such that the overall compression function is spatially smooth and to map the luminance dynamic range of ~~an~~ the input image to the more limited dynamic range of ~~an~~ the output device.

13. (Canceled).

14. (Previously Amended) The method of claim 12, wherein $L_{comp1}(L_{in})$ and $L_{comp2}(L_{in})$ are combined according to the relationship $L_{out} = \alpha(L_f)\ Lcomp1(L_{in}) + (1 - \alpha(L_f))\ Lcomp2(L_{in})$.

15. (Previously Amended) The method of claim 12, wherein $\alpha(L_f)$ is a piecewise linear function, determined by two breakpoints, B_1 and B_2.

16. (Previously Amended) The method of Claim 12, wherein function L_{comp1} is optimized for preserving overall image contrast.

17. (Previously Amended) The method of Claim 12, wherein function L_{comp2} is optimized for preserving shadow detail.

18. (Original) The method of claim 15, wherein:

$\alpha(L_f)$ =0 for values of L_f between 0 and B_1;

$\alpha(L_f)$ increases linearly from 0 to 1 for values of L_f from B_1 to B_2; and

$\alpha(L_f)$ = 1 for values of L_f between B_2 and L_{max},

where L_{max} is a maximum luminance achievable by the output device.

19. (Canceled).

20. (Original) The method of claim 12, wherein the spatial low pass filtering comprises applying a constant weight filter.

21. (Original) The method of claim 12, further comprising down-sampling the input image prior to filtering and upsampling and interpolating the input image after filtering.

22. (Original) The method of claim 12, further comprising applying a color correction for transforming L_{out}, C_1 and C_2 to CMYK for printing.